



**24 June 2022**

[Tethys](#) is an online knowledge hub that facilitates the exchange and dissemination of information on the environmental effects of wind and marine energy. The bi-weekly *Tethys Blast* highlights new publications in the [Tethys Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. Email [tethys@pnnl.gov](mailto:tethys@pnnl.gov) to contribute!

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## **Announcements**

### WREN Technologies Survey

Working Together to Resolve Environmental Effects of Wind Energy ([WREN](#)) is developing an online tool on *Tethys* to serve as a reference of available technologies for monitoring and mitigating the environmental effects of land-based and offshore wind energy development. If you would like to submit your technology for inclusion in the tool, please complete [this survey](#).

### BOEM Seeking Comments

The US Bureau of Ocean Energy Management (BOEM) has published Calls for Information for possible offshore wind leasing off [Oregon](#) and in the [Central Atlantic](#) (due 28 June 2022). BOEM is also seeking comments on the draft environmental impact statements for proposed offshore wind energy facilities off [Maryland](#) (due 8 July 2022) and [New Jersey](#) (due 8 August 2022), and for the proposed sale notice for facilities off [California](#) (due 1 August 2022).

### Ocean Hackathon

The Campus Mondial de la Mer has extended the Call for Challenges for its [Ocean Hackathon](#) until 3 July 2022. The Ocean Hackathon challenges applicants to use data for the sustainable development and preservation of oceans and seas.

## Calls for Abstracts

The [Call for ePosters](#) for [Environmental Interactions of Marine Renewables \(EIMR 2022\)](#) has been extended through 13 July 2022. EIMR will take place 4-6 October 2022 online.

The [Call for Abstracts](#) for American Clean Power's [Offshore WINDPOWER Conference & Exhibition 2022](#) is now open through 15 July 2022. The event will take place 18-19 October 2022 in Providence, US.

Energy Technology Partnership (ETP), an alliance of 14 Scottish universities, has opened the [Call for Abstracts](#) for the ETP Annual Conference 2022 through 16 September 2022. The ETP Conference will take place on 1 November 2022 in Edinburgh, UK.

The European Energy Research Alliance (EERA) has opened the [Call for Abstracts](#) for the [EERA DeepWind Conference](#) through 15 October 2022. The conference will take place 18-20 January 2023 in Trondheim, Norway.

## Funding & Testing Opportunities

The US Department of Energy (DOE) and National Alliance for Water Innovation have released a [Pilot Program Request for Proposals](#) to design, build, and test pilot-scale desalination and water-reuse treatment systems that treat non-traditional water. Concept papers due 29 June 2022.

The International Union for Conservation of Nature has launched a new [Blue Natural Capital Financing Facility Call for Proposals](#) and is looking for coastal Nature-based Solutions and Green-Gray Infrastructure projects with potential to combine conservation and/or restoration of ecosystems with the selective use of conventional engineering. Applications are due 3 July 2022.

The Central American Bank for Economic Integration (CABEI) is inviting bidders to participate in the [Public Tender 024/2022 "Building Offshore Wind Capacity in Costa Rica"](#). CABEI is seeking a South Korean consulting firm to conduct market, technical engineering, financial, and socio-economic analyses for a Buoy Monitoring System. Proposals are due 5 July 2022.

The Testing and Expertise for Marine Energy Research (TEAMER) program, supported by the US DOE, is now accepting [Request For Technical Support \(RFTS\) 7](#) applications through 16 July 2022. Developers can apply for support in numerical modeling and analysis, bench/lab or tank/flume testing, and open water activities. Visit the [TEAMER website](#) for RFTS updates.

## Student & Employment Opportunities

The European Marine Energy Centre (EMEC) is looking for an [Acoustic Engineer](#) to develop and support delivery of EMEC's environmental monitoring services, including acoustics, for clients and within national and internationally funded projects. Applications due 24 June 2022.

The Norwegian University of Science and Technology, in collaboration with the Norwegian Institute for Nature Research, is advertising a [PhD position on ecological restoration of wind energy facilities from construction to decommission](#). Applications are due 1 July 2022.

The Bath Beacon in Zero-Carbon Offshore Power is inviting Expressions of Interest from researchers who would like to be hosted at the University of Bath as a [Marie Skłodowska Curie Actions European Postdoctoral Fellow](#). Applications are due 14 July 2022.

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## Upcoming Events

### Upcoming Course

As part of the PORTOS (Ports Towards Energy Self-Sufficiency) project, the University of Plymouth is hosting an online [Training Course on Economics, Policies, and Legal Framework on Marine Renewable Energy](#) from 4-6 July 2022. Register for free [here](#) by 30 June 2022.

### Upcoming Webinars

Working Together to Resolve Environmental Effects of Wind Energy ([WREN](#)) is hosting a webinar, “[International Assessment of Priority Environmental Issues for Land-based and Offshore Wind Energy Development](#)”, on 29 June 2022 from 10:00-11:00am EDT (2:00-3:00pm UTC). The webinar will highlight results of stakeholder feedback from 294 responses across 28 countries. Panelists from several WREN member countries will provide their perspective on the assessment and priority research within the next 5-10 years. Register [here](#).

Pacific Northwest National Laboratory’s [Triton Initiative](#) is hosting the next webinar in its *Triton Talks* series on 27 July 2022 from 11:00am-12:00pm PDT (6:00-7:00pm UTC). During the webinar, the Triton Team will present Triton’s research on the environmental effects of underwater noise and anthropogenic light associated with marine energy. Register [here](#).

### Upcoming Side Event

The [jUMP](#) (Joint Action: A Stepping-stone for underwater noise monitoring in Portuguese waters) project is hosting a [One Sustainable Ocean side event](#) at the [2022 United Nations Ocean Conference](#) from 3:05-3:50pm (2:05-2:50pm UTC) on 1 July 2022. jUMP will present a short screening of “Sonic Sea” that will challenge views on ocean noise. Learn more [here](#).

### Upcoming Conference

The Partnership for Research in Marine Renewable Energy ([PRIMaRE](#)), a consortium of marine renewable energy experts across higher education, research, and industry in the UK, is hosting the [9th PRIMaRE Conference](#) on 6-7 July 2022 in Cornwall, UK. Register [here](#).

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## New Documents on *Tethys*

### Marine Energy

#### [An ecosystem-based natural capital evaluation framework that combines environmental and socio-economic implications of offshore renewable energy developments](#) – Trifonova et al. 2022

There is about to be an abrupt step-change in the use of coastal seas around the globe, specifically by the addition of large-scale offshore renewable energy (ORE) developments to combat climate change. Developing this sustainable energy supply will require trade-offs between both direct and indirect environmental effects, as well as spatial conflicts with marine uses like shipping, fishing, and recreation. However, the nexus between drivers, such as changes in the bio-physical environment from the introduction of structures and extraction of energy, and the consequent impacts on ecosystem services delivery and natural capital assets is poorly understood and rarely considered through a whole ecosystem perspective.

#### [Capabilities of an Acoustic Camera to Inform Fish Collision Risk with Current Energy Converter Turbines](#) – Staines et al. 2022

Current energy converters (CECs) are installed in energetic locations in which it is difficult to operate sensors to fulfill monitoring requirements for informing collision risk. Collecting data (i.e., about blade strikes or near-misses) that inform interactions of fishes with CECs is usually attempted using active acoustic sensors or video cameras (VCs). Limitations of low-light conditions or water turbidity that preclude effective use of VCs are overcome by using high-resolution multibeam echosounders (or acoustic cameras (ACs)). We used an AC at two sites to test its ability to detect artificial and real fish targets and determine if strike, near-miss, and near-field behavior could be observed. Interactions with fish and artificial targets with turbines have been documented but strike confirmation with an AC is novel.

#### [Integration of multitrophic aquaculture approach with marine energy projects for management and restoration of coastal ecosystems of India](#) – Ingle et al. 2022

Coastal areas of India have a big potential for establishing renewable energy projects, which are generally regarded as green energy sources. However, such projects' construction work may cause a negative environmental impact on the surrounding waters. Aquaculture projects based on seaweed and fisheries, commonly referred to as integrated multitrophic aquaculture (IMTA), can help to mitigate these impacts. Although the purpose of any IMTA is to recirculate the waste products from cultivated species and not to mitigate the environmental impacts of energy projects, IMTA may serve as a complementary activity to compensate for the environmental impacts of marine energy projects. In return, marine energy projects can provide a few facilities to IMTA projects in their areas.

## Wind Energy

### [Effect of Floating Offshore Wind Turbines on Atmospheric Circulation in California](#) – Raghukumar et al. 2022

In California offshore waters, sustained northwesterly winds have been identified as a key energy resource that could contribute substantially to California's renewable energy mandate. It is these winds that drive upwelling, which is responsible for much of the primary productivity that sustains one of the richest ecosystems on the planet. The goal of this study is to quantify changes in wind fields at the sea surface as the result of offshore wind turbine deployments by use of an atmospheric model. Modeled wind fields from this study will drive an ocean circulation model. The Weather Research and Forecasting model was implemented on a regional scale along the U.S. west coast, with a higher resolution nest along the California continental shelf.

### [Hotspots in the grid: Avian sensitivity and vulnerability to collision risk from energy infrastructure interactions in Europe and North Africa](#) – Gauld et al. 2022

Wind turbines and power lines can cause bird mortality due to collision or electrocution. The biodiversity impacts of energy infrastructure (EI) can be minimised through effective landscape-scale planning and mitigation. The identification of high-vulnerability areas is urgently needed to assess potential cumulative impacts of EI while supporting the transition to zero carbon energy. We collected GPS location data from 1,454 birds from 27 species susceptible to collision within Europe and North Africa and identified areas where tracked birds are most at risk of colliding with existing EI. Sensitivity to EI development was estimated for wind turbines and power lines by calculating the proportion of GPS flight locations at heights where birds were at risk of collision and accounting for species' specific susceptibility to collision.

### [Particle motion observed during offshore wind turbine piling operation](#) – Sigray et al. 2022

Measurement of particle motion from an offshore piling event in the North was conducted to determine noise levels. For this purpose, a bespoke sensor was developed that was both autonomous and sensitive up to 2 kHz. The measurement was undertaken both for unmitigated and mitigated piling. Three different types of mitigation techniques were employed. The acceleration zero-to-peak values and the acceleration exposure levels were determined. The results show that inferred mitigation techniques reduce the levels significantly as well as decreases the power content of higher frequencies. These results suggest that mitigation has an effect and will reduce the effect ranges of impact on marine species.

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## News & Press Releases

## **Marine Energy**

### **Sustainable Marine Powers Up Tidal Energy in Nova Scotia – Sustainable Marine Power**

Sustainable Marine has officially powered up its tidal energy operation in Canada and is delivering clean electricity to Nova Scotia's power system. The company declared that its system in Grand Passage is ready to commence commercial operation on June 9, making it the first to deliver in-stream tidal power to the grid in Canada. After years of testing, the company has proven it can effectively deliver reliable, green energy to the grid while making a meaningful impact to the community here in Nova Scotia. Sustainable Marine is striving to deliver the world's first floating tidal array at FORCE (Fundy Ocean Research Centre for Energy). This project will be delivered in phases, drawing upon the knowledge gained and lessons learned in Grand Passage.

### **TEAMER Network Director Announces RFTS 6 Technical Support Recipients – TEAMER**

The U.S. Testing Expertise and Access to Marine Energy Research (TEAMER) program recently selected ten projects through its sixth Request for Technical Support (RFTS), reflecting a total funding amount of approximately \$1,021,050. These projects will receive support for testing expertise and access to numerical modeling, laboratory or bench testing, and tank/flume testing and expertise within the growing TEAMER Facility Network. Applications for RFTS 7 are currently being accepted through July 16, 2022. Supported by the U.S. Department of Energy and directed by the Pacific Ocean Energy Trust, TEAMER accelerates the viability of marine renewables by providing access to the nation's best facilities and expertise to solve critical challenges, build knowledge, foster innovation, and drive commercialization.

### **Commissioning of Dragon 4 in Vestmannastrandir - the optimization journey continues – Minesto**

The commissioning program of the first Dragon 4 unit launched in Vestmannastrandir, Faroe Islands in May, is progressing according to plan and the flight configurations are being finetuned sequentially to optimise the power output. The kite, recently named "Íðunn", is operating autonomously 40 m below the surface and is remotely monitored, accessed, and managed through advanced systems. "We're now commissioning the kite in Vestmannastrandir fully remotely from our headquarter in Sweden. The team is screening a vast volume of data every day to support configuration for optimized power production," said Bernt Erik Westre, Chief Technology Officer of Minesto. The submerged nature of the technology calls for the ability to monitor behaviour and performance, and thereby adjust parameters as part of the tuning process.

### **The Motion of the Ocean Could Be the Next Big Source of Green Energy – TIME**

Founded in 2003, the European Marine Energy Centre (EMEC) is headquartered in the Orkney Islands, off Scotland's northern coast. Neil Kermode, the center's director since 2005, has seen some 35 tidal-energy projects tested, by startups that have come and

gone—some shuttered for lack of capitalization or nonviable technology, some absorbed by larger companies like GE. But the biggest project ever run at EMEC is still there, providing power for 1 in 12 Orcadian households. The O2, as it's dubbed, created by the Scottish company Orbital Marine, weighs some 680 tons, is longer than a Boeing 747, and skims the top of the water like the world's largest rowing scull.

### **CETO wave energy device completes tank testing – Offshore Energy**

Carnegie Clean Energy has completed the three-week tank testing campaign of its CETO wave energy device as part of the first phase of the EuropeWave Pre-Procurement Programme. The CETO Wave Energy Ireland team completed the tank testing campaign at the Cantabria Coastal and Ocean Basin in Spain last week. This first phase included wave tank testing of a small-scale CETO model. Test equipment was built for the campaign, including a control cabinet and power take off systems to control the CETO tank model. According to Carnegie, the team conducted over 200 tests, tested three different controllers and two different mooring configurations and was “very pleased” with the performance. The tank testing activities will be independently evaluated by the programme in order to validate performance in the mandatory European wave conditions.

### **Wind Energy**

#### **Ørsted commits to restoring the Humber's biodiversity with pioneering project in the UK – Ørsted**

Ørsted is partnering with Lincolnshire and Yorkshire Wildlife Trusts to help restore the biodiversity around the Humber, a large tidal estuary on the east coast of Northern England. The flagship project will invest more than GBP 2.5 million to restore parts of the Humber on an ambitious scale not seen before through the planting of three hectares of salt marsh and four hectares of seagrass, and the creation of a biogenic reef through the introduction of half a million native oysters. It will build on an ambitious programme of seagrass restoration work already underway between Ørsted's Hornsea 4 project and Yorkshire Wildlife Trust. The Humber pilot is one of a number of innovative projects that Ørsted is exploring to protect and enhance biodiversity.

#### **Equinor and partners consider 1 GW offshore wind farm off the coast of Western Norway – Equinor**

Equinor and its partners Petoro, TotalEnergies, Shell and ConocoPhillips in the Troll and Oseberg fields, have initiated a study and are looking into possible options for building a floating offshore wind farm in the Troll area some 65 kilometres west of Bergen, Norway. With an installed capacity of about ~1 GW and an annual production of ~4.3 TWh, with a startup in 2027, Trollvind could provide much of the electricity needed to run the offshore fields Troll and Oseberg through an onshore connection point. The Bergen area already serves several of these installations with power – and needs more input to its electricity grid. The plan is that the partnership will buy as much energy as the wind farm can produce at a price that can make the project possible.

## **NREL Tool Aims To Predict Interactions Between Soaring Eagles and Wind Turbines – DOE**

A new software—the Stochastic Soaring Raptor Simulator (SSRS)—developed at NREL, with support from the U.S. DOE’s Wind Energy Technologies Office, endeavors to predict the most likely long-distance flight paths of individual golden eagles as they ride updrafts. An SSRS user can choose a site, then either provide the wind conditions or ask for a specific date and time. The model, which is [publicly accessible on GitHub](#), will then simulate the likely routes golden eagles would take as they travel through the site. The SSRS goes beyond the capabilities of previous agent-based models (with raptors being the “agents”) by incorporating information about individual sites of interest, accounting for uncertainties in atmospheric conditions, and predicting raptor decision making.

## **BlueFloat Energy and Energy Estate announce 1.2GW Southern Winds Offshore Wind Project – BlueFloat Energy**

BlueFloat Energy and Energy Estate are thrilled to announce their latest offshore wind development in Australia – the Southern Winds Offshore Wind Project. Southern Winds is a 1.155 GW project that will use bottom-fixed technology and will be located 10-30 kilometres off the coasts of South Australia and Victoria. The site falls within the Portland West Offshore Wind Renewable Energy Zone announced by the Victorian Government. The announcement of Southern Winds comes shortly after recent announcements by BlueFloat Energy of a 5GW portfolio in Columbia, 1 GW in Taiwan, and a 50 MW project in the Port of Tenerife in Spain’s Canary Islands. BlueFloat Energy and Energy Estate are also continuing to advance the development of further sites in Australia and New Zealand.

## **World’s first: Innovative steel collars installed at RWE’s Kaskasi wind farm in the German North Sea – RWE**

An innovative foundation technology is celebrating its premiere at RWE’s Kaskasi offshore wind farm: For the first time ever in the renewables industry special collars were installed around the monopile foundation at seabed level. The new technology will provide additional support for lateral loading, increase the bearing capacity and improve the structural integrity of the entire foundation. The collared monopile is only one example of how RWE is leading technological development in the offshore wind industry. Further innovations introduced at Kaskasi are the vibro pile driving technology and the ‘Self-Expanding Pile Shoe’, a new foundation solution with a concrete ring that expands in the seabed. In addition, a sustainable product will be celebrating its German premiere: At Kaskasi offshore wind farm Siemens Gamesa and RWE will equip a number of wind turbines with recyclable rotor blades.